THE VETERINARY RECORD

A Weekly Journal for the Profession.

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No. 814. FEBRUARY 13, 1904. VOL. XVI

INEXPLICABLE.

The ways of the Board of Agriculture are past finding out. At one time they act in a panic and withdraw at leisure, at another they fail to act and sit with folded arms whilst the nation loses thousands.

In 1892 no less than 3001 horses were slaughtered in this kingdom as the result of infection by glanders. For some years the annual returns declined, and this was used as an answer to all suggestions that so dangerous a disease should be stamped out. From 1898 a tolerably steady rise took place, but all the Board did was to appoint a Committee to take evidence and report. That report met general approval, but to this day not a single suggestion of the Committeee has been acted upon.

The veterinary profession has advised an emendation of the law in accordance with modern scientific knowledge. The local authorities of London and Glasgow have begged for more powers to frame regulations; their requests are ignored. The Royal Agricultural Society and deputations of horse-owners have drawn attention to the wicked waste of horse-life, but the Board remain passive. Last year the returns of glanders reached a figure never but once equalled since the disease was scheduled. This year apparently promises to be worse than ever, and yet nothing is done.

For the six weeks ending Feb. 6th 326 horses have been destroyed—the figures for the corresponding period in 1901-2-3 being 307-299-246. It was expected when Lord Onslow became President of the Board that some attempt would be made to act upon the recommendations of the Departmental Committee. Still nothing is done, and if the report be correct of a speech made by the President at Newcastle, nothing will be done till the Greek Kalends.

Lord Onslow is reported to have said in effect that he recognises the importance of the disease, that he accepts the recommendations of the Departmental Committee as sound, and that some day, when the Government is richer, he hopes to obtain money from the Treasury to enable him to act. Three thousand horses to die per annum whilst we wait for money to prevent it! We are reminded of the classic story of the man who having been nearly drowned swore he would never go into the water again till he could swim.

SYMPTOMS CAUSED BY SWALLOWING NEEDLE.

A pug dog, 3 years old, property of Dr. Gilbert Smith, brought for treatment showing symptoms of gastritis, from which he recovered in four days. Two weeks after above attack he was found suffering from symptoms of hepatic irritation, due, I thought, to errors in dieting, as no history of the swallowed needle was forthcoming at the time. Recovery took place in a few days.

After the lapse of some weeks he was again brought to me with every indication of congestion of the lungs, from which after a rather brief treatment he obtained relief. I lost sight of the dog then for nearly a month, when my attention was again called to him. There was a large swelling on the near side of the dog's chest, behind the forearm, which on manipulation proved to be an abscess. This was opened, emptied, and on exploration the point of my finger came upon the head of a large darning needle, which was extracted in a very rusty condition. The dog made a speedy recovery and has been perfectly healthy since.

I mention this case as the symptoms indicate the course the needle took after reaching the stomach, which it must have pierced in a few days, and travelled round the border of the liver, through the diaphragm into the chest cavity, passing through the pleura and intercostal muscles and producing the superficial abscess mentioned.

FRACTURE OF THE OS PENIS AND AMPUTATION.

A fox-terrier dog (property of Colonel Fisher, of Moseley) brought into the yard, after a severe encounter with a bull terrier, in which the fox-terrier did not distinguish himself except by receiving rather serious wounds on various parts of the body. The most prominent injury was a puncture of the upper portion of the prepuce which on examination revealed a severe wound round the penis, and fracture of os penis. This was dressed with chinosol in solution, the catheter was with difficulty passed, and the parts supported by a pad of cotton wool, and a broad bandage for two days. This treatment was repeated twice daily, a suitable diet was given, and the dog confined to a small pen to restrain movement. On the third day paraphymosis occurred, the glans became œdematous, dark red in colour, shining and dry, and there was every evidence that necrosis was rapidly taking place at the seat of injury; it was now impossible to pass the catheter,

and the dog was in great agony, so I decided to amputate at once. He was placed on the operating table in the dorsal position and the A.C.E. mixture administered in usual manner. A circular incision was made with a bistoury just above the necrosed tissues, no ligature being applied; the os penis was sawn through at about its centre and urethra laid back and avoided in incision. There was scarcely any hæmorrhage, the wound was dressed, catheter passed and allowed to remain in position for some few hours, then removed. Wound was dressed and catheter passed twice daily for four days after the operation. The animal made a speedy recovery, is alive to-day, and seems to experience no inconvenience from losing the organ.

F. J. Taylor, M.R.C.V.S.

Moseley, Birmingham.

FISTULOUS WITHERS IN AUSTRALIA.

Rover's article (Jan. 2nd) is interesting, as it throws a sidelight on questions of interest to colonial practitioners on the *vis medicatrix naturæ* of the colonial animal, and on the apparent inertness of what are often looked on as powerful therapeutic measures.

Rover asks, why do fistulous withers occur so frequently in Australia, and why are they so often accompanied by fracture? My reply is an interrogation; Why does the average Waler rush here, there, and everywhere like a mad bull at a gatepost? There are timber fences handy as a remedy for the irritation of flies, but they are generally more solid than spinous processes and resist impact without fracture, paddocks are often not the soft luxurious beds that English meadows are, and rolling and kicking are not unknown in them; bush timber is tough and branches low, hence a variety of causes tend to frequency of fistulous withers.

The Doctor Sahib.

OXYGEN IN VETERINARY PRACTICE.

In February and March, 1899, I was called in to three cases of contagious pneumonia, commencing with a recently purchased horse. This horse was not going on at all well, so I started oxygen inhalations; he seemed to derive great benefit therefrom, brightening up after each seance as the owner said, but a second horse seemed to be in no way benefited, still both, indeed all three recovered.

For these two horses I did not use oxygen. With the third, which had a mild attack I employed, as I have done since, a red rubber ¼ inch bore gas tube, which I inserted up one nostril about 14 inches, compressing the tube at each expiration and releasing it somewhat at each inspiration. I think that this method is a better one than using a muzzle.

I employed oxygen also for a collie belonging to the late Mr. Pamnure Gordon in the same year, and believe that it saved the animal's life. For a muzzle I used a tin canister, knocking out the end and fitting it with a cork bung through which a hole was bored for a metal tube to receive the rubber tubing from the gas bag, covering the canister with cloth stuck on with emplastrum picis.

Recently having to use oxygen for a terrier, by request, I found that my apparatus had gone wrong, the rubber being perished, so to save time and money I got a cycle agent to fit a bicycle valve to one end of a football bladder, and a motor valve to the other; this, with rubber gas tubing, made a capital apparatus.

Perhaps some member of the profession may find a useful hint in the above.

W. H. Flook.

RUPTURED PERINÆUM.

The accompanying photograph shows the broken down septum between the anus and the vulva, both the roof of the vulva and the last five or six inches of the floor of the rectum being ruptured. The vulva is almost constantly full of fæces, and the sphincters being ruptured, control over the contents of the rectum is partially lost. Otherwise, the mare is in good condition and working almost every day.

The mare is five years old and has had one foal, which she delivered unassisted, being found in the above-mentioned condition the morning after foaling. The injury is probably due to the fore foot of the foal catching during parturition.

H. A. Stewart,
(C. student.)

Edinburgh, Feb. 3rd.

RHODESIAN REDWATER OR AFRICAN COAST FEVER.

Dr. Koch's Third Report.

In continuing the record of the African Coast Fever investigation, it will be remembered that in my second report I explained that while a single injection of a susceptible animal, with blood drawn from an animal in the acute stage of the disease, did not reproduce the disorder in its characteristic form, repeated injections with such blood appeared to induce a mild attack characterised by an elevation of temperature, and the appearance of a certain number of parasites in the circulating blood. From this I surmised that there was a possibility of a certain degree of immunity being established by such successive inoculations, the extent whereof could only be guaged by submitting such inoculated animals to some method of infection severe enough to induce, in unprotected animals, an attack of African Coast Fever of an intensity similar to that ordinarily communicated by natural veld infection.

The discovery of such means of infection was greatly to be desired, in order that we might be able to test the serum which we had prepared, and to decide certain other questions of importance. Various experiments were made to achieve this end.

The mild infection induced by repeated injections of blood taken from sick animals was passed through a series of healthy cattle in order to determine whether the virulence of such attacks might not be heightened by such a transfer ; but passage from one animal to another through five animals in no wise intensified the severity of the attack, the last animal reacting no more severely than the first. This experiment, however, proves that under certain conditions the organisms of Coast Fever may multiply and reproduce themselves in the blood of artificially infected animals, even when they give rise to no visible indications of disease. Our experiments have also shown that inoculations with the blood of recovered animals, which only contains an inconsiderable number of single parasites, will induce similar modified attacks of African Coast Fever, and while these experiments have not been numerous, they tend to indicate that recovered animals are even more suitable for inoculation purposes than those which are actually sick.

In other directions we sought for a means of communicating the disease in its virulent form. For instance, intraocular injections with infected blood were tried without effect, and we also endeavoured by means of tick infection experiments to imitate natural methods. For this purpose cultures of the various varieties of suspected ticks were prepared. At first much difficulty was experienced in hatching out such cultures on account of the coolness and dryness of the atmosphere, conditions which experience has shown are unfavourable for work of this description. Ultimately, however, by the use of an incubator, in whose interior the humidity of the air was artificially increased, the eggs laid by ticks collected from our animals were hatched out as expeditiously as they are under the most favourable natural conditions, but when the young ticks so hatched were placed upon healthy animals, we found that with the exception of certain doubtful cases, we failed to produce a characteristic attack. Trials were made with broods of various varieties of ticks—with broods hatched out at different temperatures, and with broods kept for various periods before being placed upon the animals—and this work is still being continued. To approach natural methods still more closely, broods of young ticks were liberated in various localities on the grass, and susceptible animals were subsequently grazed in such places. That this method should be successful appeared somewhat doubtful, as we expected that the drought, high winds, dust and sun would speedily destroy the liberated ticks, but, in spite of the unfavourable weather, these larval broods remained where they were placed, being most abundant on the sheltered side of the grass stems away from the sun, and particularly plentiful at the extremity of the stalks, where they clustered together in small clumps apparently waiting for the passage of a suitable host to whom they might attach themselves. These larval ticks displayed no tendency to migrate or travel from place to place, but remained where they were placed for several months. High winds seemed to scatter them a little in the direction in which the wind was blowing, but no other atmospheric change appeared to affect them. Soon after sowing these broods of seed ticks in the veld we found that it became highly infective. Previously only occasional cases of African Coast Fever had occurred amongst animals grazing in these places, the natural veld infection appearing to be so slight that animals must graze there for many weeks without sickening, while latterly, ticks had become exceedingly scarce and cases of sickness had been correspondingly few in number, apparently on account of the cold and drought.

The change in the infective property of the veld was presaged by a gross tick infection of all our animals, many nymphs and, subsequently, many full-grown ticks were found upon them, and every susceptible animal which we exposed speedily became sick. Since then on several occasions animals have been turned into this veld to test their immunity, together with a number of susceptible cattle to act as controls, and in each instance the controls became infected and died in about a month. From this circumstance we can safely assume that any animal remaining healthy upon such a veld must be immune.

In this way we have attained the end for which we sought, and now have at our disposal a certain means of testing the immunity of any animal by a process which is preferable for our purpose to any other, because, after all, it is veld infection which animals must be brought to withstand, and any artificial method of infection would ultimately have to be compared with the test by veld infection in order to prove its reliability.

Now, being in a position to test our animals from the first by natural infection, our experiments should satisfy all legitimate requirements.

I will now proceed to show what has been the result of testing our various experimental animals upon such an infected veld.

These experimental animals may be divided into three groups, of which we will take first, those animals treated with injections of blood.

A certain number of animals were subjected to a single inoculation with a small dose of blood taken from a sick or a recovered animal. These animals appeared to possess no immunity, as they all sickened and died ; nor were animals injected with a single large dose of blood drawn from a sick animal in any better case as 500 c.c. of blood so given afforded no protection. Repeated injections were more satisfactory, and appeared to confer an undoubtedly immunity. Successive injections with blood taken from sick animals in doses of from 200 to 2,000 c.c., with an interval of from ten to twenty days between the injections, produce a high degree of immunity, which may be attributed to the fact that the blood of animals so fortified acquires properties which render it unsuitable for the multiplication of the specific micro-organism of the disease. It is to be regretted that such a method of inoculation cannot be profitably employed on a large scale for protective purposes, on account of the difficulty experienced in obtaining blood in the quantity necessary for such a method of immunisation.

The effect of inoculation with smaller doses of such blood is not so satisfactory, but I believe that repeated

small doses of blood will confer an immunity which will be heightened in direct proportion to the number of injections to which the animal is subjected, and our experiments show that it is not necessary to employ the blood of sick animals for this purpose, as blood taken from recovered animals has a similarly satisfactory effect, and in some cases even a better one.

While the number of animals which we have treated in this way is at the present small, and I cannot give figures to show what percentage of animals have been protected, all the work done promises so well and points so clearly to the establishment of an undoubted immunity, that I think the time has arrived when this method may be put to actual test in the field.

Of our experiments in this direction I may instance two characteristic examples.

The eight animals previously mentioned subjected to repeated blood injections, in the course of which the specific organisms of the disease were conveyed from one to another in the expectation that the disease would gain virulence in its passage, were afterwards sent into the infected veld. One of these sickened and died after the usual interval, many parasites being present in the circulation ; this animal appears to have had no immunity whatever. Numbers two, three, and four sickened and died after a considerable interval, and in their case the disease underwent a marked modification, being characterised by an unusually small number of parasites in the circulating blood. For three months after it was turned into the infected veld number five continued perfectly healthy ; it then became sick, and now only number six, seven and eight survive. These are quite well to-day, and appear to be immune.

A remnant of three out of the eight is small, but allowance must be made for the fact that these animals only received two injections of the mildest virus at our command, therefore I consider that this result may be taken as showing the minimum ratio likely to be protected by repeated blood inoculations. In the case of numbers five, and also, perhaps, in the case of two, three and four, permanent protection would probably have resulted had the blood injections, by which they were temporarily immunised, been repeated.

A somewhat similar experiment was made with the blood of a cow which came from Beira, shortly after the establishment of the Hillside Station, and which can be considered immune, as it has been running on infected veld ever since its arrival. In its blood we find the occasional Coast Fever parasites usually present in such cases. Two susceptible animals were injected subcutaneously with 20 c.c. of this cow's blood on six successive occasions, with an interval of three days between each inoculation, and were afterwards turned out on the infected veld. After some months one animal sickened and died. In this experiment I consider that the interval allowed between the injections was too short, and with more lengthy intervals results would have been better.

At present it is impossible to say definitely how long immunity of this description will last, how many injections shall be made, or what space of time between the inoculations is best ; nor can I state what class of recovered animals are most suitable for inoculating from.

For the solution of these and other questions experiments are still being made, but at present I am of opinion that the best results will be obtained by using freshly-drawn defibrinated blood from recovered animals which are in good condition. This blood should be injected subcutaneously into each animal which it is desired to protect in a dose of ten cubic centimetres, and the injection should be repeated four times with an interval of seven days between each injection. Afterwards 10 c.c. doses should be given for some time every two weeks, and later a dose once a month should suffice.

Continuing the record of our investigations, I now come to the second experimental group. In this are comprised animals treated with serum.

The serum used was prepared as I explained in my former report, some of our immune animals being injected with increasing doses of blood taken from sick animals, beginning with doses of 5 c.c., and finishing with a maximum of 2,000 c.c., while others received a succession of doses of 2,000 c.c. each, of sick blood injected subcutaneously, or of 1,000 c.c. injected intravenously. As successive large injections gave the best results, the system of gradually increased dosage was abandoned. In fortifying these animals, special care was taken to select samples of blood containing a large number of organisms, no blood being employed which showed on microscopic examination less than an equal number of parasites and blood cells. This precaution was necessary, as it was our intention to prepare a serum which would exert its influence specially upon the disease-producing organisms present in the blood.

After three or four large injections given at intervals of from two or three weeks, which were well borne by all the inoculated animals, the serum of these animals was found to possess very remarkable properties. When injected into healthy animals in doses up to 150 c.c. no systematic disturbance resulted, but when sick animals were similarly treated, its administration was followed by a striking change in the African Coast Fever parasites circulating in their blood. The parasites became smaller, their outline was lost, sometimes they were scarcely visible, and in the course of a few days they disappeared. Carefully kept records show that in every case in which serum was administered, even to animals which were highly infected, there was always a marked reduction in the number of parasites, and sometimes they vanished altogether. Details of these records which possess a high scientific interest I hold over for a later and more exhaustive report. This specific action of our serum upon the organisms of the disease was exactly what we sought, but we found that, unfortunately, it also possessed, in a very high degree, an undesirable hæmolytic property which exerted a solvent action upon the blood cells of sick animals. A slight hæmolytic action was looked for as the inevitable result of the association of red blood cells with organisms in the blood used for fortification, from which it was impossible to separate them, but the exceptional character of the hæmolysis produced in sick animals inoculated with this serum, while healthy animals remain unaffected, would indicate that in this disease the red blood corpuscles are in an unusually unstable condition.

Injection of 50 c.c. of well prepared serum into a sick animal has nearly always been fatal, death being primarily due to its solvent action upon the red blood cells. In sick animals so treated there is sudden rise of temperature, followed by an equally sudden fall, which is associated with collapse and death. On post-mortem the urine is found to be bloody, and the fat, subcutaneous tissues and mucous membranes are intensely yellow from staining with altered blood pigment. These appearances follow the administration of serum not only in cases in which the disease has become well established and many parasites are present in the blood, but even when it is given before any parasites appear in the circulation, and while the only indication of approaching indisposition is an elevation of temperature. To discuss the scientific bearing of these phenomena would occupy too much space and would be somewhat beyond the scope of this report. I will, therefore, defer such discussion until the final report is prepared.

The employment of serum for therapeutic purposes having been found to be highly dangerous if large doses were given, the administration of repeated small doses was tried. By this means in some cases we succeeded in banishing the parasites without producing either

hæmolysis or yellowness of the mucous membranes, nevertheless the animals died. Post-mortem examination in these cases showed that the pathological changes which had taken place in the kidneys, liver, and lymphatic glands were of such a character that recovery was out of the question. Only when animals were treated with small doses of serum in the initial stages of the disease were we occasionally able to save a few, but in practice such a method would be inapplicable, as treatment could only be begun in time if systematic temperature records were kept of every animal, and microscopic examination of their blood made from time to time.

Preventive treatment was also attempted by means of serum inoculation. In some cases a single large dose was injected while the animals were healthy, and in others repeated small doses were given, the animals subsequently being turned into the infected veld in the hope that natural infection would produce, in any animal protected by serum, an attack of such moderate intensity that recovery and subsequent immunity would follow. Three animals treated with large single doses of serum and afterwards turned out, all sickened and died, although the prolonged duration of their illness showed that in their case the serum exercised a certain inhibitive action. In other animals subjected to repeated doses no beneficial results followed the administration of doses of 5 c.c., but repeated injections of 10 and 20 c.c. had marked but varied results, much, apparently, depending upon the particular sample of serum employed. In one experiment, for instance, with serum taken from one particular animal, out of eleven animals inoculated, six ultimately became immune, while with another sample of serum we were only able to save one animal in ten, and 50 c.c. of another sample of moderately powerful serum saved and immunised three animals out of six.

It is possible that by preparing a most powerful serum, which would have taken a longer time, and by other modifications of the process, better results might have been obtained, but in the course of our work we found we had to reckon with a complicating factor which interfered most materially with any satisfactory application of serum treatment; this factor is the occurrence of Texas fever complications. Texas fever or redwater infection, I have found in the course of our experimental work here, is much more widely disseminated in Rhodesia than I at first suspected, in fact, to such an extent does it exist that we need not be at all surprised if any Rhodesian animal develops an acute attack of Texas fever or redwater when attacked by any febrile disorder of a debilitating nature.

In former reports I have referred to cases in which Coast Fever has been complicated by Redwater, induced as a result of the lower vitality and elevated temperature caused by the first-mentioned disease. The same complications were encountered in the course of our serum experiments. In several cases in which animals attacked by Coast Fever appeared to be approaching convalescence after serum treatment, their temperatures having subsided and the parasites of Coast Fever having almost entirely disappeared, a sudden rise of temperature occurred which heralded the appearance of the organisms of redwater in the blood, the urine became bloody, and the animal, already weakened by the attack of Coast Fever, collapsed and died.

In this manner we lost no fewer than fourteen animals which presented every appearance of rallying from attacks of Coast Fever, mitigated as these were by the administration of serum, and there is no doubt that, in the absence of Texas fever infection, serum treatment would have been much more satisfactory.

In our second serum experiment, in the course of which only one animal survived out of ten, death in several instances was due to Texas fever complications.

This experience shows that any system of preventive inoculation against Coast fever is likely to be attended by a high mortality if it is based upon the production of a severe attack of the disease which is to be artificially controlled by serum treatment, or in any other way, as such severe attacks are likely to be followed only too frequently by fatal attacks of redwater. The best way to avoid this grave danger is to have recourse to some method of inoculation which will only produce such modified attacks of the disease as are not likely to have an unduly lowering effect upon the constitution of the animals subjected to it and mild attacks of this description are produced by repeated blood inoculations. In no instance where blood inoculation was tried did we lose an animal by reason of the appearance of Texas fever, and, therefore, I am convinced that this method is at present the only practical one which can be profitably employed for the protection of susceptible animals.

Our third group of experiments were made upon animals believed to have become immune under natural conditions.

Of these experiments I may instance the following:—

(*a*) Two half-bred Zebu cattle were presented to the Station by Dr. Sauer, who thought that cattle of this class might be found to possess a natural immunity to Coast Fever. Both animals were turned out to graze upon our infected veld, and shortly afterwards they became sick and died.

(*b*) Five animals bought in Beira were brought to Bulawayo and run upon infected veld. Of these, three sickened and died, two being young animals of pure Zebu breed. The survivors, old cows, have remained perfectly healthy, and have given birth to strong and vigorous calves, and the blood of one of these cows has been used for immunisation purposes with good results.

(*c*) Six animals presented by the German Government were sent to Bulawayo from Dar-es-Salaam for test. None have contracted African Coast Fever, but two have died from other causes, one being infected with tsetse.

(*d*) A number of animals (some, the survivors of various Salisbury herds; some, animals which had been subjected to inoculation at Hillside Camp with blood taken from Texan cattle previous to my arrival, all of whom had been grazing for many months upon infected veld in Salisbury and Bulawayo) were turned out on our artificially infected pasture. None of these have sickened.

From these observations we may conclude:—

1st. Zebu cattle have no inherent immunity.

2nd. German East Africa cattle from coast districts are perfectly immune, and also some Beira animals, a fact bearing out my surmise that this disease is of coastal origin.

3rd. The resistance displayed by naturally immunised animals indicates that such animals may be depended upon to withstand infection. Up to the present time we have not met with a single case of relapse in recovered animals, and we may, therefore, assume that recurrence of the disease only occurs in rare instances.

I have now studied this disease in all directions, so far as this was possible, for six months, and made numerous and exhaustive experiments, therefore I believe I am sufficiently well informed to be in a position to express an opinion as to what means are best adapted for combating it.

In this relation naturally the question of the feasibility of stamping out the disease presents itself. That this might be possible under certain conditions I believe, as with the assistance of the microscope we are able to identify all animals capable of spreading infection, not only animals which are sick but also animals which have recovered from the disease and are still able to infect indirectly. Animals of the latter class which may

retain the specific organism of the disease in their circulation, perhaps for the remainder of their lives, may be regarded as the real carriers of infection. How these animals may be disposed of demands consideration if the eradication of the disease is contemplated. With such an end in view it would be necessary to place recovered animals in such a position that they would no longer be a danger to others. This would not be so costly a process as it would be in dealing with some other diseases as there would be no necessity to destroy such animals summarily. It would suffice if they were separated from their susceptible neighbours, and subsequently used for slaughter purposes. The position therefore, somewhat resembles the position with regard to glanders, in which disease certain infected animals are identified by means of the mallein test, and are subsequently destroyed. Combating the spread of Coast fever is in some respects less difficult than combating the spread of glanders, as the necessary measures would be simple, more certain, and less expensive.

But there is one condition which must be fulfilled if such a measure is to succeed, and that condition entails absolute control of all cattle and of all movements of stock.

Under European conditions where this is feasible, stamping out a disease of this class would be the best way of dealing with it, although such a process would be expensive and would take some years to carry out. Here, however, in Rhodesia, conditions differ altogether from those obtaining in European countries, as native cattle cannot be placed under control. Chief Veterinary Surgeon Gray, who is well acquainted with local conditions, assures me that such a stamping out process would be altogether impracticable in the present unfenced condition of the country, and impossible of application to native cattle, therefore another way out of our present difficulties must be sought, and the only one available is through artificial immunisation. Immunisation of cattle against African Coast Fever, it should be remembered differs in one very important respect from immunisation against rinderpest and lungsickness. Animals inoculated against lungsickness and rinderpest do not become a future source of danger to susceptible cattle in their vicinity, but in all malarial diseases of the class to which African Coast Fever, Texas fever, and tsetse disease belong, immunised animals, although not directly capable of communicating infection, are indirectly able to do it with the assistance of an intermediate insect bearer, which, in the case of African Coast Fever, is the tick. Such immunised animals, while they remain in apparent health, are still able to disseminate infection, and that this is the case seriously handicaps those interested in stock raising, for it means that their surplus animals are not available for export alive, nor can pedigree animals be introduced from without unless they are subjected to an immunising process, and the most practicable process of immunisation against African Coast Fever which I can recommend at present is that of inoculation with recovered blood.

Were it not for the fact that the country is threatened by an epidemic invasion of African Coast Fever and that the rainy season is approaching, when a recrudescence of the disease may be expected, I would have preferred to devote more time to the investigation of the merits and demerits of this method before expressing an opinion about it, but under present conditions I consider that circumstances justify my bringing the matter forward without delay, although it has not yet been gone fully into.

Every method of immunisation requires time before its benefits are apparent, and the establishment of immunity in African Coast Fever will take, I think, from four to six weeks. To wait, therefore, for the opening of the rainy season, while the spread of infection will be much more rapid, before commencing operations would probably mean that many more animals would be lost, as the inoculation of infected animals will be without beneficial effect. The process recommended is devoid of risk and is inexpensive. For the present I advise that it be only applied to animals exposed to imminent risk of infection, to infected herds, and to animals running on infected pastures, particularly to herds in which isolated cases of the disease have only recently occurred. The work of carrying out such inoculations should, when possible, be left to veterinary surgeons or to those who have been instructed in the method. The animals used for taking the blood intended for inoculation purposes should be in apparent good health and condition, and should be either animals which have recovered from an unmistakable attack of the disease, or animals which have survived an outbreak which has carried off the majority of their neighbours, and which have subsequently grazed for a long time upon veld known to be highly infected, and when possible, the blood should be first microscopically examined before use, in order to determine whether the organisms usually found in the blood of recovered animals are present.

For the convenience of farmers and stockowners who are so situated that they cannot obtain the assistance of a veterinary surgeon and who are unable to get an object lesson in the process of inoculating, the following directions are appended :—

To INOCULATE.—The operator should provide himself with the following appliances :—

A lancet or sharp pointed knife.

A trocar with canula about one-eight of an inch in diameter, or a canula of this size pointed in the same manner as a hypodermic needle, to draw off the blood which is to be used for inoculating.

A wire egg whisk which has previously been cleaned by boiling or heating to redness in a fire.

A hypodermic syringe to contain ten cubic centimetres which should have previously been boiled along with the needles, to be used for inoculating.

Two enamel pitchers to hold about half a gallon each, which have been rinsed with a five per cent. solution of carbolic acid in water, and then washed out with boiled water.

A few pieces of freshly-boiled clean muslin to strain the blood.

To prepare it for the operation of bleeding, it should be cast, its legs secured and the head held down. The jugular vein is then raised by passing a stong cord round the base of the neck ; the hair should then be clipped off over the vein and the skin washed with soap, using a five per cent. solution of Jeyes' fluid or carbolic acid in water ; then make a small incision over the vein along its length with the knife, cutting through the skin, insert the trocar and canula into the vein, passing the trocar upwards in the direction of the head, withdraw the trocar leaving the canula in the vein, and draw off the blood required into one of the enamel pitchers, stirring it all the time with the wire whisk to prevent it from coagulating.

When a sufficient quantity of blood has been taken, the cord should be loosened from the neck and the canula withdrawn. The wound may then be closed by placing a piece of adhesive plaster over it, by putting a stitch through the skin on either side with a suture needle and a suture silk, or by pinning the lips of the wound together with a pin, which should only pass through the skin and then twisting a piece of silk around the pin figure-of-eight fashion.

After stirring the blood for 10 or 12 minutes it should be strained through a piece of clean muslin into the other enamel pitcher, and carefully covered to keep out dust and flies ; it will then be fit for use.

As a pint and three-quarters of strained blood is sufficient to inoculate one hundred head of cattle, it will seldom be necessary to draw more blood from an animal

at one time than three pints, which when whisked up and strained, will give at least 1,000 c.c. suitable for inoculating with, although, if necessary, three or four quarts can be taken from an animal without injury. Every care should be taken to cleanse the site of the operation before bleeding, and the vein should be injured as little as possible when the trocar is inserted.

In case of urgency, where the trocar and canula cannot be procured, the jugular vein may be raised in the ordinary way and the animal bled with a fleam, but by so doing there is more risk of damaging the vein than if a canula is used, and the blood is more likely to be contaminated.

To inoculate animals which it is desired to protect, the animal is secured, the syringe is filled with strained blood, the loose skin of the neck is gathered up between the thumb and forefinger, the needle of the hypodermic syringe is inserted under the skin, ten cubic centimetres are injected, the needle is withdrawn, the swelling caused by the injected blood is rubbed gently away with the hand, and the animal is released. The dose for all animals is ten cubic centimetres, irrespective of age.

In conclusion, I wish to impress upon those intending to inoculate, that at this stage of our work, when the whole question has not been gone thoroughly into, too much must not be expected of the method, nor must good results be looked for when it is applied to herds in which the disease has gained a thorough foothold.

R. Koch.

Bulawayo, Rhodesia,
25th September, 1903.
—*The Agricultural Journal* (Cape).

ROYAL COUNTIES' VETERINARY MEDICAL ASSOCIATION.

The annual General meeting and dinner were held at the Great Western Hotel, Reading, on Friday, Jan. 29. The President, Mr. E. Percival Owen, of Thame, took the chair at the annual meeting at 2.45; the other members attending being Messrs. H. G. Simpson, Windsor, and J. East, Aylesbury, vice-Presidents; J. P. S. Walker, Hon. Treas., Oxford; Percy J. Simpson, Hon. Sec., Maidenhead; A. L. Butters, London; W. G. Flanagan, Reading; Hulsberg, Princes Risboro'; J. Sutcliffe Hurndall, London; G. E. King, Abingdon; Dr. McI. McCall, London; Major Meredith, A.V.D., Windsor; Jas. F. Simpson, Maidenhead; S. H. Slocock, Hounslow; E. L. Stroud, Paddington; Albert Wheatley, Reading; F. W. Wragg, London; and Prof. Pritchard, London.

Apologies were received for inability to attend, by telegram and letter, from Messrs. J. C. Coleman, T. W. and H. G. Lepper, E. J. Mellett, S. Villar, H. C. Jagger, T. D. Hughes, P. W. D. Smith, W. G. Flanagan, jun., John Hatch, W. L. Harrison, John McKerlie, Ed. Lawrence, W. J. Mulvey, Chas. Sheather, P. Irving, Prof. McCall, Prof. M'Fadyean, Prof. Macqueen, etc.

Royal Institute of Public Health.

The meeting unanimously appointed the President and Mr. Henry G. Simpson as delegates to represent this Association at the Congress of the above Institute, to be held at Folkestone in July; and Dr. McCall kindly undertook—if he were in Glasgow at the time—to represent the Association at the Congress and Exhibition of the Sanitary Institute to be held in that city the same month.

Finance.

The Treasurer's financial statement showed income (including balance brought forward £29 9s. 11d.) amounting to £57 6s. 5d., and expenditure £22 17s. 2d. leaving a balance in bank of £34 9s. 3d. Arrears amounting to £6 were also due.

Mr. Butters (auditor) and the President commented on the favourable financial position of the Association, and the balance sheet was unanimously adopted on the motion of Mr. Wragg, seconded by Mr. H. G. Simpson.

Place of Next Meeting.

Mr. H. G. Simpson had much pleasure in proposing that the summer meeting of the Association be held at Windsor, a town which the Society had not visited since 1888, and to which he offered a cordial welcome.

The resolution, having been seconded by the Hon. Sec., was unanimously adopted.

Post-Mortem Specimen.

The President exhibited a dentigerous cyst removed from a horse's head just below the ear. The horse had had a small discharging wound in that region for some considerable time, and on cutting down the specimen exhibited was easily removed.

The Victoria Veterinary Benevolent Fund.

Mr. Flanagan, in accordance with notice, proposed "That this Society contribute ten guineas to the funds of the Victoria Veterinary Benevolent Fund," and said that when he raised the question at the November meeting in Red Lion Square several suggestions were made, one being that they should give a fixed annual donation, but the general feeling was that the Association should vote such a sum each year as would accord with the state of the funds in hand and with the work the Fund might be doing.

Mr. J. F. Simpson said that if it would not be thought out of place in him, as a member of the Committee of the Fund, he would like to second the resolution. He was in a position—as were Prof. Pritchard and Mr. Wragg, taking an active part in it—to assure the Association that the Society was doing very good work. The only drawback it experienced was want of funds. Those who were not connected with the Victoria Benevolent Fund had no conception of the amount of distress existing amongst incapacitated members of the profession and the widows and orphans of deceased members. They could not better lay out their surplus money than in giving support to such an institution. (Hear, hear.)

Mr. Butters endorsed and supported the proposition, quite agreeing with all that had fallen from Mr. Simpson with regard to the numerous cases of distress which occurred in the profession. Unless one really got into connection with such benevolent societies one could not realise the large amount of downright poverty endured by many widows and orphans of members of the profession: so that their money could not be better expended than by placing it in the hands of the executive of the Victoria Benevolent Fund.

Prof. Pritchard, as President of the Victoria Fund, supporting the motion, said the greatest appeal he could put before them would be letters from relatives of professional brethren who had "gone to the wall" through no fault of their own, and of widows and orphans who were left next door to starvation. The assistance the Fund could give, owing to its small income, was only ameliorative. Only the day before Mr. Wragg and he signed ten cheques for a sovereign each, and every case was thoroughly deserving. Those cheques were sent out once a month. The Fund must be supported if it was to continue the good work it was trying to do.

Mr. Hurndall observed that the Fund appealed to his mind very strongly, although he was only a subscriber to it. He was sure they could not better expend any

little surplus they had than in trying to help distressed members, and relatives of members, of the profession.

Mr. WRAGG also spoke in support of the proposition, narrating a sad case of a Norfolk practitioner.

The resolution, having been supported by the President, was carried unanimously.

PRESIDENTIAL ADDRESS.

E. PERCIVAL OWEN, M.R.C.V.S.

Gentlemen,—I have to thank you for the kind and unanimous way in which you elected me as President of this Association at your last meeting. I greatly regret that I was prevented from attending the summer and autumn meetings last year. As your ex-president, Mr. East, is my closest neighbouring practitioner nothing would have given me greater pleasure than to have been there to support him. I am afraid that having to follow such capable men as our past presidents have been, I shall fail to reach their high standard; but I shall endeavour, as far as I can, and with your assistance, to further the interests of the Association, and hand it over to my successor in the same healthy condition in which I now find it.

You have all seen our present list of members and our financial seatement, and I think you will join with me in thinkin g them very satisfactory. Looking at the work of the past year I think we are to be congratulated in having had so good a paper read to us as the one on "Navel Ill," by Mr. G. E. King, and in not having to go outside of our members for a paper, and I only hope that during my year of office some of you learned gentlemen will come forward and give us your ideas on certain of the puzzles you must meet in your every-day practice, and that the attendance will be more numerous when such papers are read, so as to create better discussions than we have had.

Now on these occasions it is usual for your President to give a *resumé* of the doings of the profession, or to indulge in prophetic schemes, but I am unable to do justice to either. In my own little town I see very little of the Profesion; still, I try to keep in touch with it by taking in some of the papers, and in doing so am very much struck with the advance those papers have made in the last 20 years; and I am always grateful to my fellow practitioners for recording cases and writing articles, which undoubtedly are of great help to younger practitioners like myself. It is also very gratifying to read of the exceedingly friendly relations we hold with our foreign *confrères*. In making this remark may I say with what sorrow I noticed the loss the world has sustained in the deaths of Prof. Nocard and Prof. Dieckerhoff, names known and respected by all of you, and men whom we all shall miss greatly.

During the past year we have to congratulate ourselves on having at last got our profession properly recognised by the War Office, and we must congratulate our brother member, Mr. Simpson, on sticking to his guns, and helping so much to bring the matter to such a successful issue. Ours is a noble profession, but it would not be what it is unless we got men like Mr. Simpson and his brother councillors to give us their services free, as they do, in spite of having to put up with all the remarks made about them. I honestly think that our profession is safe in the hands of such men as our present Council is composed of, and that we all ought to be thankful to those gentlemen who give us so much of their time. I am a member of my local Urban District Council, and I can assure you it is a thankless office to sit at a meeting from two to three hours and then get "called over the coals" for not reducing the rates! so you see I speak feelingly.

I am also glad to see that individuals have been fighting, and some of them successfully, to get exemption from serving on juries; and the time, I hear, is not far distant when our claim will be fully verified.

We still await the decision of our experts on the communicability of bovine tuberculosis to man, but we as veterinary surgeons are bound take every precaution against the danger; and I am looking forward to the time when bovine tuberculosis will be scheduled under the Diseases of Animals Acts. Since the discovery of tuberculin (and that, in my experience, *in the proper hands* is a most reliable test), and with proper hygienic surroundings, I think the disease is capable of being stamped out; but without State aid that is impossible. Glanders, also, although not affecting country practitioners, from the returns appears as rife as ever in the larger towns, and I am sure you will all agree with me that with State aid in the way of compensation, the mallein test would soon stamp it out. When one comes to consider the awful danger to human life, it seems astonishing that our Government does not wake up on these matters.

As regards the question of the representation of the profession in Parliament, I am one of those who consider that if we each and all of us keep pegging away at our local Members we shall get these knotty points passed at last; and that, on the other hand, if we sent a Member of our own he would only have one voice.

I am afraid that I am wearying you by these remarks of mine, all of which you no doubt have heard before from abler lips. Still, before I sit down I should like to add my quota of thanks to another foreign *confrère*, viz., Prof. Schmidt, for his treatment of that fatal disease known under such a variety of names as Milk Fever, Parturient Apoplexy, etc., for we country practitioners, or at least the majority of us, must own that his treatment and ideas have been of great assistance to us.

From a scientific point of view we have made great strides of late years in veterinary surgery and bacteriology, thanks to the hard work done by the eminent members of our profession, who by their energy, zeal, and research have done their utmost to place us in the position that enables us to work side by side with the sister profession. It remains now for us to assist in carrying on this work, and I am pleased to see recorded only the other day so many contributions from fellow practitioners of specimens and cases to the Cancer Research Committee.

Our profession is never learnt, for we find something new every day, and Associations like this help us all, both from an educational and a social point of view, and now we are to be congratulated, I hear, on having a post-graduate course and a University degree. If I had not joined this Association on my arrival in the Royal Counties I should have missed knowing a great many friends, and also missed a great deal of knowledge; and I advise every young practitioner on starting to join this or some kindred Association, for I feel confident that, like me, they will never regret it.

I must thank you for the very patient hearing you have given me, and I sincerely hope the Association will continue to flourish, and that good results may follow its different meetings.

Mr. EAST said it gave him great pleasure to propose a very hearty vote of thanks to their President for the excellent address he had given them that day. They were all very proud to see Mr. Owen occupying that position, and hoped that he would be spared for many years to come to be amongst the members of that Association. (Hear, hear).

Mr. HURNDALL seconded the motion with great pleasure, and it was carried by acclamation.

The PRESIDENT briefly acknowledged the compliment.

The Annual Dinner.

The Dinner was served in the style for which the Hotel is famed. The President (Mr. E. P. Owen) ably filled the chair, faced by the Hon. Treasurer and Hon. Secretary as Vice-Chairman ; and the following gentlemen joined the company : Dr. Wilcockson, and Messrs. Wm. Ferguson, Wm. Bonny, R. H. Bradley, Hayes, A. C. Butler, and A. P. Hart, visitors. The Mayor of Lichfield and Mr. A. H. Bull, (ex-Mayor of Reading) had also been invited, but were unable to attend.

The toast of "The King" was submitted in felicitous terms by the President, and loyally honoured.

Mr. Butters, in submitting "The Imperial Forces," said we had been told to think Imperially and when we considered the relationships of this kingdom in ties of trade and of blood all over the world we ought to feel proud that we possessed such a heritage. We had one of the finest navies in the world—probably the finest, and we were all proud of, respected, and admired the "handy men" who manned our ships, and were prepared to trust our true British seamen in times of peril and danger. (Hear, hear). The Army was a branch of the Imperial forces with which they as veterinary surgeons were more nearly allied, having *confrères* in the cavalry and artillery, who had been spoken of in despatches in the late war, and had done their duty in a manly way. (Applause). Then the Yeomanry had come very much to the front in South Africa. They used to be looked upon as "feather-bed soldiers," but if they liked feather beds at home they had, when abroad, undertaken cheerfully the hardships of campaigning with a zest which was the envy and admiration of all. The Yeomanry were doing their duty manfully and well, and in their training underwent the hardest and most severe work. (Hear, hear.) When they reviewed all the forces of the Crown they must feel proud, and need have no fear but that in the future, as in the past, Great Britain would maintain her foremost rank among the nations. (Applause).

Major Meredith (1st Life Guards), responding, referred to the latest warrant affecting the A.V.D. and thanked Mr. James Simpson and Prof. Williams particularly for the part they had taken in bringing it about. Thanks were specially due to those gentlemen from those members of the profession whom he might term "laymen." But for them, and the support given them by the profession individually and collectively, he did not think such advantages would have been gained for the Army Veterinary Department. They were undoubtedly the "backbone" in bringing that about, for officers in the A.V.D. were not allowed to express their feelings as strongly as they would sometimes like to do. He had been 20 years in the Army, and he did not think the Department had receded in any way, though he would not go so far as some and say it had got great advancement: at any rate, it was highly appreciated in the Army as well as outside. (Hear, hear.) As a sphere of life which interested more than others, he did not think any young gentleman could do better than enter the A.V.D. now, under its present warrant. For the young entrant there was no better life going—he could honestly and truthfully say there was no branch in the Army where a gentleman could get a better life and "more for his meney" than by entering the A.V.D. (Applause).

Mr. Wm. Ferguson gave "The Veterinary Profession." He believed the profession started somewhere about the year 1750, and since the College received its Charter in 1844 it had done good service, not only to the animal kind but to the human kind as well. The profession had made vast strides in every possible way, more particularly of late years. It now numbered about 3,500 members, and he had no doubt the new Army scheme would lead to great accessions. The Royal Counties V.M.A. had made good progress, and from it he believed the Victoria Benevolent Society was an offshoot. He coupled with the toast the name of Prof. Pritchard, who had been a friend of his for 40 years, and never spared himself in advancing the noble profession of which he was so distinguished an ornament. (Applause.)

Prof. Pritchard, in reply, said during the 50 years or so that he had belonged to the profession he had no doubt made many mistakes--and he hoped he might live to make more—(hear, hear)—but one of the greatest was that he had not made notes of what he had seen and heard in connection with the profession. Had he done so he need not doctor any more horses, for he was sure the book he could have written would have brought him in a very handsome income, and his family afterwards. (Laughter and hear.) Referring to the carly heads of the College, he said he thought Professor Spooner was one of the grandest men who ever graced the front of their profession. (Hear, hear.) He did not hesitate to say he owed to Professor Spooner all he possessed. Not only did he teach him (the speaker) but he taught hundreds of their profession lessons which he was sure those still living would never forget. (Hear, hear.) In connection with the profession, the Royal College of Veterinary Surgeons and the Royal Veterinary College were often mixed up, and it was extraordinary even to this day how few outside the profession recognised the difference between the two. Of course one was the teaching school and the other the body that granted diplomas, and, as he might say, "made" veterinary surgeons. He had acted in connection with the former as a councilman, and, he was proud to say, once to be President. (Applause). When he was first elected a member of Council he was at the top of the poll with nine votes. Things were very different now, and the change had been brought about, he thought, to a very great extent by the Veterinary Medical Associations. Now what had the Council done? They had elected a Board of Examiners from time to time, and that Board had searched the brains, the mind part, of the students to an extent probably not known before. That might be right ; but those practitioners who had to ask young veterinary surgeons to act for them as assistants would find out that although the educational material in a certain line had been sharp, there was not found in the young people turned out from the College that amount of practical ability that would give practitioners the certainty of finding an assistant who could do their work under their superintendence. There was no doubt that the work done by the College of Veterinary Surgeons had added very considerably to the status of the veterinary surgeon so far as the gentleman and the scientific man was concerned, and they ought to be thankful for that. With regard to veterinary medical associations —though that did not belong to the toast—he and his friend, Mr. Wragg, were the only two in the room who belonged to the Council of the first Veterinary Medical Association, and that was in connection with the Royal Veterinary College. In that Veterinary Medical Association he had performed the offices of librarian, assistant secretary, secretary, treasurer, and president, and afterwards became the patron, so that he knew something about *the* Veterinary Medical Association from which sprang all the local associations. (Applause). So long as he lived he should appreciate the honour done him by the Royal Counties Association in electing him an associate.

Mr. Hayes submitted the toast of "Success to the Royal Counties Veterinary Medical Association," and in doing so said he felt very proud to see his old friend Mr. Owen occupying the Presidential chair, for he was one who threw his whole heart into everything he undertook ; and if he managed the affairs of that Association as well as he managed everything else with which he had been connected, the Association would have a very successful year. (Applause.)

The toast was drunk very heartily, with musical honours.

The PRESIDENT said that, like kindred Associations, has certainly done good work, and one of the best strokes of business they had done that day was voting ten guineas to the Victoria Benevolent. He hoped that would become an annual gift. In conclusion, he expressed the hope that one of their members would provide a good paper for the Windsor summer meeting, and that more young members would attend the Society's gatherings.

Mr. J. F. SIMPSON then gave "The Medical Profession." In days gone by, he remarked, that term was supposed simply to apply to apply to those who attended to the medical wants of the human race; but nowadays the medical profession were generous enough not to dispute the claim of the veterinarians for inclusion. There was a time in the history of the veterinary profession when they were bound—and he honestly admitted that from want of knowledge they were bound—to call in the aid of the medical profession as he now submitted the toast. They were never likely to forget the assistance which was given to them by that profession. (Hear, hear.) But, although grateful for favours already received, they did claim that they were now able to "toddle" alone. It might be asked, were they pathologists and able to examine their students in pathology? He said unquestionably they were. (Hear, hear.) There was but one pathology, and the pathology of the human subject was precisely the same as the pathology of the veterinary subject. Some asked, again, where they were going to find their physiologists? He said they had as good physiologists in the veterinary profession as there were in the medical profession, and that although the physiology of the veterinary profession might not exactly—as it did in the pathological—agree with the physiology of the medical profession, still he hoped that in that they, as a veterinary profession, were in a position to gradually and gracefully retire from their examining board those who had helped them in the past. (Hear, hear.) The medical profession had always stood faithfully by them, and he hoped they would be as generous in their appreciation of the way in which veterinarians had stood by them. It was admitted by the medical profession that much was to be learned by them from experiments upon the lower animals; and who was more capable of giving assistance in that than the members of the veterinary profession? (Hear, hear.) He hoped both professions would stand by each other. If veterinarians were enabled to assist in their investigations, he felt sure they would in their turn be glad to give them the results of those investigations. (Hear, hear.) Proceeding, he said he believed the medical profession had benevolent institutions; and in the veterinary they had the Victoria Benevolent, which was only a very small institution, so that those associated were unable to give the relief they desired to do. It might be only a dream of his, but he had in his mind the possibility of the veterinary profession to be able to nominate a child to one of those benevolent institutions or orphanages. That could not be done without money; but he said it could be done by energy. (Hear, hear.) Within the past week those who had toiled hard had succeeded in placing in such an institution a child of a worthy veterinary surgeon who, from the bite of a cat, died from blood poisoning, and left children absolutely unprovided for. He, assisted by kind friends, succeeded in placing that child, with the enormous majority of 1312 votes, into the London Orphan Asylum only four days ago. (Applause.) That, apart from postages, cost him nothing but energy. Again, a year or two ago the grandchildren of a veterinary surgeon were left positively destitute through no fault of father or grandfather. He exerted himself, and two of those children were elected the same year—one to the British Orphan Asylum and one to the London Orphanage. A few years ago he heard of a struggling widow of a veterinary surgeon who had tried for two years to get her child into the Orphan Asylum. She had polled 48 votes, having no one to help her. He never saw the woman until the day of the subsequent election, but it was represented to him that she deserved help, and by throwing himself heart and soul into the case he got that child elected to the British Orphan Asylum, nearly on the top on the list, with, he thought, over 900 votes. That was what could be done by energy. (App.) Those who had not time could do something by money; and he did not despair of raising in the veterinary profession the £900 needed to keep always in one of the institutions the child of a veterinary surgeon presented by the Victoria Veterinary Benevolent. (Applause.) Mr. Simpson went on to say that Prof. Pritchard was of opinion that the young veterinary surgeons of to-day were not as practical as they were in his day. He did not think they were singular in that. Dr. Wilcockson could tell them that men in the medical profession when they first launched out into practice were not quite so practical as they were 20 years ago or more. That brought one back to the vexed question as to whether pupilage in their profession was right. He had always maintained that pupilage was the right thing—that boys on leaving school should be placed with a veterinary surgeon in order to obtain that knowledge of the manipulation of animal, and of their habits, which was necessary before they could begin to study the diseases of animals. On every occasion when he had advanced that view he had been beaten. He had taken his licking with a good grace, but it did not alter his opinion. He did not know whether it was possible or desirable in the medical profession to institute a period of pupilage, but he thought if such a thing were possible Dr. Wilcockson would agree with him it would be a move in the right direction. He coupled with the toast the name of Dr. Wilcockson, and also of Dr. McCall, who, he reminded them, was not only one of their profession and a distinguished adviser of the Board of Agriculture, but also a member of the medical profession. (Applause.)

Dr. WILCOCKSON, who was cordially received on rising to respond, said he and his professional brethren felt, as Mr. Simpson had said, that they and the members of the veterinary profession belonged to each other, and that they went hand-in-hand through nearly all their life work. The veterinary profession had advanced more rapidly in the last 20 or 30 years than the medical, simply because they had been putting on a spurt to catch them up—(hear, hear)—and now he thought they had certainly done so. He did not think the pupilage system would ever come back in the medical profession, because they had their hospitals, which gave them such an enormous lot of work of which every student had the advantage. Veterinarians had certain homes and refuges to which their subjects could go, but they were not so highly developed or in such large numbers as the human hospitals. Science developed so fast, and there was so much to get through in the five years curriculum, that a medical student could not find time to spend in pupilage. He went forth after his final examination having met thousands of cases in his hospital practice, which the veterinary student of course had not the opportunity of doing. (Hear, hear.) As to benevolent institutions, they had the Epsom College, where sons of members of the medical profession who could not afford to pay the ordinary fees could through the preliminary and first scientific part of their training at a very much reduced rate; and he thought it would be a very good thing if the veterinary profession adopted a like plan. The public had no idea that the veterinary profession stood on the high scientific basis it did; and if he might say so he thought they were somewhat to blame for that, because the younger mem-

bers, as soon as they left College, thought they had done with reading. Some of them seldom opened their journals or went to the higher institutions for further knowledge, thinking ayparently that the only thing in life was to get a big practice and make money. If they would take it up there is no reason why the Universities of this country should not grant them a degree; and it was a funny thing that the veterinary profession, which had advanced so much did not possess the standing at our Universities which it did in other countries. (Hear, hear.) He had noticed a tendency in both professions to shirk pharmacy and the therapeutical advantages they had, and to fall back on ready made up and prepared medicines. That, in his opinion and experience, was harmful. (Hear, hear.) A more important question still was that of the prescribing chemist. Medical men were suffering very much from chemists getting their elaborate preparations and then prescribing them to their patients, (who, instead of paying the doctor his fee, went to the chemist); and he feared veterinarians were beginning to feel the same thing. (Hear, hear.) The speaker then referred to the present open-air treatment of tuberculosis, which he thought was being carried too far, and also on cancer research, in which veterinarians were now helping to a great extent.

Dr. McCall also returned thanks. As to the pupilage question, he said, speaking as a man who had gone through both courses, he considered at the present moment a veterinary surgeon duly qualified after passing his final examination, even more so than the medical man, because in the latter profession they had such a great variety of subjects, and in each subject a great variety of books. In the veterinary profession a man who properly attended to his lectures would very likely attain sufficient knowledge to qualify him for his examination, because of the less number of books he had to deal with to get through. The pupilage question certainly required consideration. The fact of a man having attended so many cases in hospital didn't necessarily qualify him to succeed in practice, because in hospital too much was made of special cases, which seldom occurred in ordinary practice. Speaking for himself, he learned more in the first year after leaving College than he had learned for some years previously in the hospitals. Pupilage could be looked at from two points of view. If each student could be placed under a man who had studied veterinary medicine up to the present day, and kept up with the times, such pupil would make the best veterinary surgeon; but if they put young men in the hands of men who had not kept themselves up-to-date in special subjects, those students would come to College with ideas that had been embued into their natures, as it were, by those practitioners—ideas which had in several instances to be absolutely reversed. It was a much more difficult thing to get good crops out of land which had been previously badly sown and cultivated than out of a virgin soil. (Hear, hear.) Dr. McCall concluded with some interesting remarks on tuberculosis, in which he mentioned that out of an exjerience of many thousand head of cattle in the Glasgow import market less than one in 1000 from the States and Canada had affected lungs; and those animals having been running in the open for three or four years was a strong argument in favour of fresh air. (Hear, hear.)

The next toast, that of "The Visitors," was given by Dr. McCall, and acknowledged by Mr. Bonny.

Mr. Flanagan, proposing "The President and Officers of the R.C.V.M.A." said that was the twentieth year of the existence of the Association, their lamented friend, the late Mr. G. A. Lepper, having been the first President in 1884, and he (the speaker) having had the privilege of being the second. (Applause). He had been very pleased to see that Association grow as it had, and was quite sure it had done a great deal of good in the Royal Counties. (Hear, hear.) It had brought men together who might else have been at variance, and led to many friendships. With regard to their worthy President, they had seen what he had been able to do as Secretary of that Association for some four or five years; and they thanked him for his address that afternoon, and also for his kind hospitality that night. (Applause.) They had in Mr. Percy Simpson, their Secretary, a young member of the profession, and of the Association, but one who had entered into the affairs of the Association with much enthnsiasm, and had performed the secretarial duties in a very able and capable manner, for which they thanked him. (Applause). They all knew their able and valued treasurer, Mr. Walker, well, and all he need say was that but for his careful supervision of the funds they would not be in the position to vote away ten guines at times when they wished to do so, as they had that day. (Applause.)

The officers briefly acknowledged.

During the evening capital songs were sung by the President, and Messrs. W. Bonny, R. H. Bradley, Percy Simpson, A. P. Hart, G. E. King, J. East, Lionel Stroud, and W. G. Flanagan; and amusing monologues contributed by Prof. Pritchard and Dr. Wilcockson. Mr. Fredk. Davis was the pianist.

ANTHRAX IN RELATION TO TRADE.*

By Prof. J. Wortley Axe.

(Continued from p. 495.)

Discussion.

Principal J. McCall: I should like to read you at the outset where Professor Axe looks upon as the object of his paper. He says (p. 74) "The object of this paper is to elicit and accumulate experience on anthrax in connection with trade processes, and to determine if possible to what extent, if at all, the continued increase in the disease during recent years is due to the operation of the latter." In reality we are asked to discuss what are the reasons or the causes for the increase of the prevalence of anthrax during the last few years. I think Prof. Axe has very clearly brought before us what is the cause of the disease in the human subject. Anthrax in the human subject I am of opinion never originates except by inhalation or inoculation. I am one of those who do not believe that anthrax in the human subject to any extent is dependent upon the consumption of anthrax carcases. My reason for such a statement is this, that I have had under my own observation the fact of numerous carcases of anthrax being consumed by human beings without any bad effect. About 10 or probably more years ago we had a serious outbreak, the most serious I remember in my life, in a dairy a few miles out of Glasgow. That dairy was conducted by the celebrated Mr. James Morten, the man who brought the City Bank to its knees, and ruined thousands. He started a large dairy a few miles out of Glasgow; he had about 100 cows at the dairy, and a very large number of those animals succumbed to anthrax. A considerable number of carcases had been brought into the slaughterhouse in Glasgow before it was known what was the nature of the disease. When the medical officer of health, who is now at the head of the medical department in Scotland, and myself investigated the matter we found that about 40 carcases had been brought into Glasgow, and a considerable number had been taken to Paisley; and the medical officer of Paisley tried if possible to detect any traces of death that had the slightest connection with anthrax, or carbuncular disease, and we failed to connect any illness with the consumption of all these carcases. That is my

* At the meeting of the National Veterinary Association at Windermere, Sept. 9th, 1903.

reason for saying that I do not believe anthrax, to any marked extent, is dependent upon the consumption of anthrax carcases. I do not want anyone to go away and assume that I advocate that the carcases of anthrax animals should be allowed to go out and be consumed by the public. Not at all. We are met here, I understand, as a scientific body of men to admit facts ; and I repeat again that I am perfectly clear upon the subject, that the ordinary method of cooking the flesh of an anthrax animal destroys the virus.

We all know that where we have tanneries and other places where wool is sorted and skins are dressed, and so on, that in the human subject we find anthrax disease more frequently prevalent than elsewhere. We also know in practice that in districts where animals have been pastured in the neighbourhood of these, and where the refuse from the tanneries has been put on the fields, and where the water from the tanks has been allowed to be distributed over the marshes, that those animals frequently fall victims to the disease ; so that we see the connection between the disease in the human subject and in the lower animal. Prof. Axe, as I understand from his paper, is inclined to believe that the increase in the prevalence of this disease in the last few years must be due to a larger number of these anthrax affected skins and what not coming from abroad : am I right ?

Prof. AXE : In a certain measure, yes—Perhaps I should say not necessarily to a larger number, but to the working of the skins. It is shown that there is a larger number imported.

Prof. MCCALL : I have an explanation which satisfies myself, but which in all probability will not satisfy Prof. Axe. I incline to the opinion that anthrax is not a more prevalent disease at the present time than it has been in the years gone by, but veterinarians are now adopting entirely different methods of investigation in determining the existence of the disease. A great many veterinarians even at the present day, think that an animal cannot die from anthrax unless there are well-marked evidences of the disease written upon the carcase ; for example, hæmorrhage from the rectum, emphysema, and so on. From the experience that I have had of late I fail to detect any of those conditions. An animal may die from anthrax and not exhibit the slightest discolouration of any part of his body—no swellings, no anything ; and not only so, but I should like to say that even the very history you would say goes against it being anthrax.

As an example, about four months or more ago a carcase of a cow had been bled but not skinned or its abdomen opened, was brought into the slaughterhouse in Glasgow, was examined by the veterinary inspector there, and under the microscope it was found that the bacilli were present in the blood of the animal, in the spleen. The spleen was enlarged too, but there was no swelling about the body of the animal. I put myself to the trouble of investigating this case. I drove out to the farm whence the carcase was brought, 15 miles out of Glasgow, and saw the farmer. He was in the act of going into Glasgow, in the hope that the carcase was passed, and he would get his money from the sale of it. I told him that the inspectors in the slaughter-house had condemned it for anthrax, and that I was there to make enquiries to see why he sent in the animal, because he must know that an anthrax carcase should not be removed from where it was. He gave me the history, which was as follows. He bred the cow ; it had always been in perfect health. At 12 o'clock in the day it was fed at usual ; it left a small quantity of the food ; at 3 o'clock in the afternoon the dairy-maid went into the cowshed and found the cow down, and it would not get up. Two hours afterwards, at five o'clock, the farmer, who had been away from home, returned and they told him what was wrong ; he went into the barn, tried to get the animal up, but it would not rise ; he administered a draught—he was one of those farmers who is a little doctor on his own account—and in giving it the cow died in his hands, and he very naturally thought the animal was choked. The animal was bled and the carcase sent in. In the course of my conversation I saw that the farmer did not believe that his animal had died from anthrax ; he did not say so, but from the manner in which he spoke he left the impression on my mind that he was perfectly satisfied the animal was choked by the drink which he had given it. I came back to the City. I told my son the conversation, and the impression it had left on my mind, and I asked him to inoculate a dog and some rabbits. The dog was inoculated the same night at 8 o'clock, and two rabbits ; that was on the Friday night at 8 o'clock. On the Saturday morning one of the rabbits was lame and sick, the other rabbit was leaping about in the box. The dog did not look at all well, and rigors every now and then passed over his body. On Sunday, one of the rabbits, the lame one, was dead at 7 o'clock in the morning ; the dog died two hours afterwards, and the other rabbit about midday. It was a case of anthrax. An animal may die from anthrax when, unless you have recourse to the microscope, it will be impossible to decide it was a case of anthrax.

My reason for giving this instance is, if I can, to prove to you that the impression left upon my mind is that the reason we have an increase in the number of cases of anthrax, is not due to the greater prevalence of the disease but to the fact that the members of the veterinary profession are doing all they can to recognise the disease in stages in which formerly it was not recognised. Formerly if a record had been made of the death of that animal the record would have been that it was a case of choking.

The PRESIDENT : This is a very interesting paper and one that I am certain is open to a great deal of discussion, because I think the evidence must be accumulating on the point to which Professor Axe has especially directed his attention, namely, to elicit and accumulate experience of anthrax in connection with trade processes. I have never seen noticed in any veterinary journal, nor, indeed, so far as I am aware, in any medical journal, evidence with regard to the point which he makes the subject matter of his paper that was brought to light in the issue of a blue book containing the second report of the Royal Commision on Sewage Disposal. It is a volume well worth its money. I think the cost of it is 5/10, and the amount of information with regard to bacteria disease which may be spread by sewage disposal, which I take it is also included in Prof. Prof. Axe's paper with trade disposal, is well worth the perusal of veterinary surgeons. I refer more especially to the report on Anthrax ; and I would direct attention to the report of Dr. Houson on anthrax with relation to trade refuse in sewage disposal. The experiments were carried out by him and Dr. Gordon. I will just shortly show you the relation of sewage disposal in the spread of anthrax taken in conjunction with trade refuse. At Yeovil, in Somerset, the principal industry of the place is tanning, and tanning principally in foreign sheep hides. In the beginning of 1890 or 1891 the attention of these gentlemen who were working for the Royal Commission was directed to Yeovil, because at Yeovil they had just discontinued for a period of four or five months, an experimental treatment of sewage in that district. They treated their sewage in this way. They first passed it through a septic tank, which you may look upon as a scientific name for an ordinary cesspool ; the sludge accumulated ; the washings were passed over a gauze filter ; that filtration was passed over a fine filter, and the effluent was finally passed into a brook which flowed into the river Yeo. In the sewage treated in those experimental tanks were the effluents from certain tanneries connected with the tanning processes.

They clearly proved, after the tanks had been disused for a period of five months, that anthrax existed in the septic tank. They clearly proved through their experiments that anthrax existed in the sludge of the septic tanks; they also clearly proved that anthrax existed in washings from the gauze filter beds, and also in the washings from the secondary, or fine filter beds. That led them to the consideration of the question as to where these anthrax spores or bacilli came from. They went further back and examined the effluent from the final catch-pits of certain hide factories in that place: and there again they were able to demonstrate without doubt that anthrax spores at any rate existed in the effluent from those factories. They then went to the other end. Although the works they had been experimenting on had been discontinued, they went and examined the banks of Yeo brook; they went and examined the mud on the banks of the Yeo river itself at periods not very far removed from where the sewage of the town entered the river; and from the mud of both those positions they found that anthrax also existed. That is interesting, because the process which these hides underwent is given as a kind of summary to the Report. In the first place they were soaked in a pit; the water was run off twice in a period of 24 hours, and then the hides were scraped with a blunt knife. They were then placed in another pit, having been smeared over previously with a mixture of arsenic and lime, in the proportion of 5 parts of red arsenic to a bushel of lime. I do not know what the proportion of that red arsenic is to the bushel of lime, but it is evident, from the results of the anthrax bacilli or the spores appearing in the final effluent, that the arsenic was not in sufficient proportion to kill the germ or its spore. After it had been 12 hours in that tank, it was scraped and washed again, placed into a third tank with lime and water for about three weeks; then came the pouring process, dunging, and water in the tubs. Here is a loophole, but a highly improbable one, that the germs of the baciili might accidentally become associated with the skins in that process. Then came another process, the bran process; and finally what we may look upon as an antiseptic process, the lime process—alum, salt, flour, and yolks of eggs, before the hides were stove dried and sent to be made into gloves. This, to my mind, is a very interesting set of experiments, and I think you will agree with me it bears directly on Professor Axe's paper. We know from the statistics he has given us that Somerset is one of the worst anthrax contaminated districts there is in England. If you take the last ten years I think it comes somewhere about third, and it shows clearly to my mind that there is some relation to the industries in those districts with the prevalence of anthrax as recorded by the Board of Agriculture returns. For one, I am not satisfied with those returns; I do not think they are near complete enough; they do not go nearly deep enough into the matter. I am certain that this question of contamination of anthrax through trade industries is one of the most important questions which we have to investigate—much more thoroughly than it is at the present time if any progress is to be made in stamping out the disease (Cheers.)

Mr. James Laithwood: I am sure we ought to thank Professor Axe for the very able paper which he has written on this subject. His object evidently appears—to try and find out if possible the greatest cause of the increase of this disease during a number of years. There is one cause which he has not mentioned, namely, the use of foreign cotton cake. I feel fairly certain that I have seen during the last twelve months, or a little over, two cases which I could pretty well trace to cotton cake as being the cause of the disease. In one case a considerable number of animals died on the farm, and it was proved beyond all question that it was anthrax. My instructions to the farmer were that he was to change the food entirely in every direction possible. Amongst the food that was being used was a quantity of cotton cake that had been somewhat damaged in transit. Something over a ton of this cake was left over, and it remained on the farm for something like eight months. Then, not knowing what to do with the cake, and not being sure whether the anthrax was due to the cake or not, he gave a portion of the cake to his cows, and in a very few days afterwards he had three cases of anthrax, which pointed pretty conclusively, in my opinion, to the fact that the cake was the cause of the disease. I agree that cotton cake is only one of the causes; the other causes mentioned by Professor Axe are undoubtedly perfectly correct. I also agree with Professor McCall that the better diagnosis of the disease in the present day has considerably to do with the increase that is recorded in the statistics.

Mr. T. Eaton Jones: I should like to say that in Liverpool over and over again we haxe found anthrax to exist in Chilian hay. It has killed many cattle; and in investigating the disease, the cause has nearly always been found to be Chilian hay.

Professor W. O. Williams: Professor Axe in his paper says that his object is to elicit and accumulate facts. I might mention that in the Southern States of America there are about five thousand million pounds of cotton—altogether eleven million bales of cotton are grown and exported. This is nearly all grown in the low-lying lands, which are very frequently flooded, principally on the Mississippi. It is no uncommon thing along the banks of the Mississippi, for two or three thousand miles, for any carcases of cattle that have died from anthrax to be thrown into the river. It is quite a common thing in Louisiana for thousands of cattle to die of anthrax every year. I am absolutely certain that the Mississippi water, and the water of all the swamps in the neighbourhood of the Mississippi, is thoroughly saturated with the disease of anthrax. The methods of handling the cotton are far from cleanly, and without knowing it as a positive fact, I do know that the cotton seed and the cotton itself in bales is very frequently damaged with the water of the Mississippi, and I can quite easily understand how a very large quantity of this material that is exported to this country comes over in a contaminated condition. I might mention that the disease smallpox, which is also very rampant on the Mississippi, was at one time without a doubt sent over to this country, into Lancashire, in cotton bales; and I heard it stated that some of the medical officers of health in Lancashire had several outbreaks of a most virulent smallpox which they suspected had been communicated to the patients from handling cotton that is imported from America. The disease is so prevalent in that country that it is the custom to vaccinate, as they call it, most of the cattle against the disease, and also to vaccinate the horses.

Professor M'Fadyean: I need hardly say that I read with great interest the paper which Professor Axe took the trouble to prepare for us, and I also listened with much interest to what fell from Prof. McCall and the other speakers. It appears to me that the primary point for discussion that ought to be settled is whether the increase in the reported outbreaks of anthrax during recent years is apparent or real. It is interesting to notice that Prof. Axe assumes in his paper that the increase is a real one, whereas Prof. McCall is disposed to believe that the increase is only apparent. Professor McCall thinks that the apparent increase is due to the fact that more care is now taken in detecting and reporting cases of anthrax. I am sorry to say that I cannot accept that explanation. I do not for a moment contend that there has not been greater care exercised during recent years with regard to the reporting of outbreaks of anthrax, but there is a circumstance which I

think ought to be obvious to anybody which makes it impossible to accept that as the explanation of the increase in the figures. One difficulty is this: as Prof. Axe has pointed out in his paper, the striking increase began about the year 1893, and it goes on generally. If you will inspect his statistics you will see that in almost every county in England, Scotland and Wales quite a decided increase in the reported outbreaks occurred in 1893 or 1894. I would like to ask Prof. McCall—unfortunately he will not have an opportunity of replying—what he thought was the circumstance, occurring say in 1893, that sharpened the wits of local authorities and veterinary inspectors all over the country? I do not think it is reasonable to suppose that the increase was only apparent and brought about in that way. I therefore agree with Prof. Axe that to some extent, at any rate, and mainly, the increase was a real one. I quite admit that neither the statistics before 1893 nor subsequent to 1893 can be taken as absolutely accurate. I believe there has always been a very large margin of error in the statistics with regard to anthrax. Form my own personal knowledge extending over the last 20 years I affirm that the statistics published by the Board of Agriculture embrace a good many cases that are not anthrax, and I also know that a great many cases of anthrax are not reported. But I have no reason to believe that with regard to that looseness or want of accuracy there is much difference between the figures prior to 1893 and those subsequent to it. So I think we must admit that there was about the period 1893-4 a decided increase in the prevalence of anthrax in this country. I take it that Prof. Axe contends that the increase was merely due to the introduction of fresh virus from abroad, through the manufacturing processes which he mentions in his paper. I would like to say that I cannot accept that either. We all know that every year a considerable amount of anthrax virus is imported into this country. We know that at London Docks every year a considerable number of porters who are engaged in carrying raw hides from the ships contract malignant pustule. We also know that there are cases of pustule disease among the operatives in Bradford and elsewhere, and many of us know that there are cases of anthrax on land in England and possibly in Scotland attributable to refuse from tanneries and such places. But then I do not know whether Prof. Axe maintains that these sources of introduction of fresh anthrax virus were not in existence before the year 1893 or 1894. I think, in order to compel us to adopt the explanation which he suggests, he must show that some important alteration took place all over the kingdom in connection with the manufacturing processes that are dealt with in his paper, and I venture to say he will not be able to show that. I venture to say it is not reasonable to suggest for a moment that during the year 1893 or 1894 a vastly greater amount of anthrax contaminated material was introduced into this country from abroad than was introduced in the year 1890 or 1891. Then there is another prominent feature of the statistics which goes against the asssumption that Prof. Axe has made, namely, that the increase took place about 1893 or 1894, in what might be called the purely agricultural counties, where from my own knowledge I can affirm that there are no large tanneries, and none of the businesses specified by Prof. Axe are carried on on a large scale. Take for example the County of Wigtown, which I refer to because it is my native county and I am well acquainted with it. If you turn to the statistics you will find that the maximum number of cases reported in 1892 from that county was three, and in the year 1893 they jumped up to ten. Turn again to the case of Kircudbright, another agricultural county, and you will find almost the same. The maximum number prior to 1893 was 3; in 1892 only one case was reported, and then in 1893, 9 cases were reported. I might go on with similar cases with regard to the statistics. I hope when Prof. Axe replies he will be able to dispose of this objection. At the top of p. 69 Prof. Axe says "This allows, and prompts, the suggestion that the continued increase of the disease in the country is not altogether the outcome of a mere extension of the malady through the operation of old abiding causes, but in some measure at least the result of the repeated introduction of fresh virus from outside sources." Of course it is necessary to turn to a previous page to know what is meant by the word "this." And on turning to p. 65 we find that what Professor Axe is referring to is the fact that the preponderance of cases of anthrax among the cattle population vary from county to county. I do not know any reason whatever why one should assume that fresh virus is introduced from the outside because in any one year, or even in a succession of years, one county has 10 per cent. outbreak of anthrax and another has only one. I suggest to Prof. Axe that it cannot be perfectly reasonable to suppose that the anthrax virus has for many years been equally distributed on the land in different counties. I can quite understand that if two counties had a uniform distribution of anthrax virus in the soil the outbreaks then would be proportional to the cattle population, but there is no reason why they should be proportional to the cattle population if the distribution of the virus is not uniform; and I would like to ask if he has any information saying what is the distribution of the anthrax virus in the soil, apart altogether from the importation from outside sources. Most of what I have just said is of the nature of destructive criticism, and I might well stop at that, because it is legitimate to object to an explanation, even although one is not prepared to offer an explanation of one's own. But I would like to suggest to Prof. Axe and the meeting that the increase which occurred in 1893 and 1894 may have been due to peculiar climatic conditions. I do not know whether Prof. Axe remembers whether I am right in saying that 1893 was a very hot year, and I think 1894 was also. It was a hot season when the pastures were very much burnt up. Our President has referred to the important bearing of temperature on the multiplication of the anthrax virus outside the animal body. What is perhaps of still greater importance is the necessity of a comparatively high temperature for sporulation. Personally, I do not believe that the position of the virus in the soil is due to the sporulitic multiplication of the bacilli. I think what is all important in soil contamination is that there should be a period of high temperature, 70°, or, still better, 80°, during which the bacilli resolve themselves into spores. Once that has occurred then there may be, not permanent soil contamination, but there may be soil contamination extending over a considerable period of years. I suggest that the hot spells which we had about 1893 and 1894 were eminently favourable for increasing the amount of anthrax virus in the soil of this country, apart altogether from the introduction of it in fresh quantities from abroad. But I might also point out that the drought and heat would operate in another direction in increasing the outbreaks of anthrax. I agree with what Mr. Laithwood said, that there are very considerable grounds for believing that anthrax is introduced into this country from abroad with cake—cotton cake and linseed cake; and after what has fallen from Professor Williams nobody can be surprised if numerous samples of these cakes contain the germs of anthrax. The point I want to make is that the scarcity of hay in 1893 or 1894 would compel cattle owners to employ a larger proportion of imported feeding stuffs. As a matter of fact we know that it was about that period that foreign hay was largely introduced into this country.

I have only one other observation to make, and it is this. The language in which Professor Axe's paper is couched is so very clear that I hesitate to suggest that

any portion of it is ambiguous; and yet I am constrained to believe that there is one sentence in his paper which does not express what he intended, and that sentence is the first one. Prof. Axe says: "It is just thirty years since I first demonstrated by the experimental method the communicability of anthrax from animal to animal, and drew attention to the rod-like body in the blood with which we are now so familiar as the bacillus anthracis." I want to ask Prof. Axe if he lays claim to have been the discoverer of the anthrax bacillus.

Prof. AXE: I do not lay claim to anything.

Prof. M'FADYEAN: If Prof. Axe will not disclaim that, then I am compelled to make a statement that he may not find pleasant. I maintain that the natural sense of that sentence is that Prof. Axe was the first to demonstrate the communicability of anthrax from animal to animal; and not only that, but that he was the first person to call attention to the rods which are now known to be the actual cause of anthrax. Now neither of these claims can for one moment be substantiated. I have no hesitation whatever in asserting that the transmissibility of anthrax from animal to animal by the experimental method had been abundantly proved before Prof. Axe was born. If Prof. Axe, when he gives his explanation later on, says that all he intended was that 30 years ago he first demonstrated to himself the communicability of anthrax from animal to animal—

Prof. AXE: Perhaps it would be as well if I mention the fact that the experiments to which I refer are recorded in the Journal of the Royal Agricultural Society. They are recorded, I believe, in 1873 in *The Veterinarian*, where I speak of the rods, and where I show the effects of the inoculation of rabbits and other animals.

Prof. M'FADYEAN: I am glad I have now got the explanation. All I want to be firm about is that the things which Prof. Axe did in 1873 had been done long before that.

(To be continued.)

DISEASES OF ANIMALS ACTS 1894 TO 1903.

SUMMARY OF RETURNS, WEEK ENDING FEBRUARY 6, 1904.

Period.		Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies. Cases Confirmed.		Swine Fever.	
		Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Dogs.	Other	Out-breaks.	Slaugh-tered *
Week ended February 6, 1904	..	23	35	..	..	17	47	..	..	27	184
Corresponding week in 1903	..	22	36	..	..	29	49	..	..	25	106
Corresponding week in 1902	..	22	59	..	..	20	54	..	..	30	128
Corresponding week in 1901	..	13	25	1	170	27	45	..	..	40	152
Total for 6 weeks, 1904	.. ..	125	164	..	..	144	326	..	..	168	1044
Corresponding period in 1903	..	99	158	..	..	123	246	..	..	169	842
Corresponding period in 1902	..	98	178	..	..	137	299	2	..	228	1413
Corresponding period in 1901	..	77	114	6	347	162	307	..	1	203	1193

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection.

Board of Agriculture and Fisheries, Feb. 9th, 1904.

Pulling Horses' Tails.

At West Ham, James Hare, 26, a carman, of Eve Road, West Ham, was charged on remand with maiming three horses and stealing 1½lb. of hair, the property of Jeremiah Hedges, a contractor, of Boleyn Road, Forest Gate; but the charge was altered to one of cruelly torturing the horses. Mr. F. Stern prosecuted; Mr. W. H. Cowl defended. The evidence for the prosecution was that the accused was in the employment of Mr. Hedges as carman, who has stables at Gift Lane, West Ham. On the morning of January 24 Hare was in the stable combing the tail of one of eight horses there, and was seen by a youth named Holden to twist some hair of the tail around an iron comb. He then pulled the hair two or three times and the horse, which stepped back, "grunted." The hair he pulled away he put into his pocket, and the next day, when spoken to about the matter, he said he had put the hair with some of his own and had sold it. It was afterwards found that the tails of three horses had been similarly treated, and Mr. Spurgeon, M.R.C.V.S., stated that the animals had suffered some pain and their value had been depreciated. At the prisoner's house 1½lb. of horse hair was found, the greater part of it being long hair. The defence was that all the prisoner did was to comb the tails, and that the hair he took was but the loose strands that came out in the combing. Mr. Gillespie said he thought it was a deliberate case, and fined the accused £2 and £1 16s. costs, with the alternative of a month's hard labour.

The Liability of Dog Owners.

At Scarborough County Court, on Tuesday, Feb. 9th, a case of considerable interest to owners of dogs was heard before Judge Raikes. The North-Eastern Railway Company claimed from Miss Annie Johnson, lodging-house keeper, Blenheim Terrace, Scarborough, £8 13s 3d. for damage to a horse and lorry, occasioned, it was alleged, by the defendant's collie dog frightening the horse.

For the Company it was urged that the dog was of a vicious nature, it having been known to jump up and bark at horses, as it did on August 17th, causing a serious accident at Scarborough.

Mr. Wragge, for the defence, urged that the horse which ran away was not properly harnessed. It was, he said, a deliberate attempt by the North-Eastern Railway Company to relieve themselves of their legal liability to one of their servants. The dog was perfectly harmless and good-tempered. If the Company substantiated their case, it would never be safe to keep a dog unless it were deaf and dumb. (Laughter.)

His Honour held that the accident was caused by the barking of the dog, and that, even if it was the result of playfulness, the owner of the dog was responsible for any damage done to other animals. A verdict was given for the plaintiff company for £8 and costs.—*Yorkshire Post.*

PARLIAMENTARY.

HOUSE OF COMMONS, Friday, Feb. 5.

The following Bills were presented by private members :—

* * * *

Mr. PRICE (Norfolk, E.)—Bill to provide for the payment of compensation to the owners of carcases of animals condemned after slaughter and destroyed by order of a Magistrate on account of tuberculosis.

ARMY VETERINARY DEPARTMENT.

Extract from *London Gazette*,

WAR OFFICE, PALL MALL, Feb. 5.

The undermentioned gentlemen to be Lieutenants on augmentation :—D. Macdonald, H. J. Holness, A. J. Thompson, F. C. O'Rorke, T. A. Nicholas, E. C. Russell, F.R.C.V.S.

Feb. 9.

Major S. Duff-Gillespie is placed on retired pay.

The Galloway in U.S.A.

Mr. A. S. Alexander, writing in *Weekly Live Stock Report* (Chicago), says :

The Galloway can boast of breed prepotency second to none. It is so strong that a pure-bred Galloway bull may be safely counted upon to dehorn 90 per cent. of his calves from any kind of a cow, and even from cows of the long-horned breeds. Nor has the wondrous coat of the Galloway been bred or pampered off. It originated centuries ago for the purpose of rendering life possible when exposed to every inclemency of the weather. It was and is still composed of an outer waterproof coat to shed heavy rains, and an under jacket of soft, close, warm hair to maintain body heat and exclude excessive cold. The aboriginal bison of our western plains was provided with a similar protection against the weather, and the Galloway hide of to-day takes the place of the extinct bison's robe so popular while procurable years ago.—*N.B.A.*

Contravention of the Parasitic Mange Order.

James Clark, carting contractor, 46 Market Street, was charged in Aberdeen Justice of the Peace Court, before Bailie Glass and Mr. William Sangster, with contravening a Board of Agriculture Order by failing to report to the police that three of his horses were suffering from the parasitic mange. He pleaded guilty, and admitted a previous conviction in December last. Through his agent (Mr. Jackson) he said his idea was that it was not necessary to report each individual outbreak. The fine imposed was the same as on the former occasion, £3 3s., with the option of ten days' imprisonment.

Messrs. Sutherland and M'Gregor, carting contractors, Poynernook Road, pleaded guilty to having failed to report that two of their horses had been affected with the disease. Mr. Pope, solicitor for the firm, said they had called in a veterinary surgeon, and were under the impression that it lay with him to do the reporting. The fine was £2 2s., with the alternative of seven days' imprisonment.

ATLANTIC CATTLE TRADE.—The deaths on board the cattle-boats are amazingly few in number. Captain Wade, the wharfinger, keeps records of the mortality rates, and states that in one year the liner *Manchester City* landed 4,753 cattle in Manchester, and had a record of only one dead and five lost at sea.—*Manchester Guardian.*

Personal.

At the Annual Convention of the National Live Stock Association held in Portland, Oregon, last week, Dr. W. H. Dalrymple, M.R.C.V.S., of the Louisiana State University and Experiment Station, was re-elected a member of the Executive Committee of the Association for the ensuing year.—*The Daily Picayune*, New Orleans, Jan. 23.

CORRESPONDENCE.

OSTEOMALACIA.

Sir,

There is a paragraph at the close of Mr. Wolstenholme's article, Jan. 2, pregnant with practical interest to those of us who meet with bony growths, though at first sight the connection may not be apparent; the paragraph runs :—"I have noticed that the ribs and other bones of the trunk often cut easily with the knife when making post-mortems on Iceland ponies, especially when aged and those which had a peculiar stiff waddling gait during life."

In 1870 observers in Iceland noticed that animals which fed in the pastures where the finer ashes of Mt. Hecla fall, suffered from immense exostoses on the jaw bones, and in some the cranial and other bones swelled and bulged out. These observations may be verified to-day by anyone who takes a trip to Iceland, and Mr. Wolstenholme corroborates the statement by his post-mortem experiences.

Hecla lava consists of silica, alumina, calcium, magnesia, and ferric oxide. These are by no means rare salts and by no means uncommon in the fodder of domestic animals, especially the horse; and the cases quoted by Mr. Harold Elliott are from a volcanic neighbourhood. In cases of osteomalacia, in cases of multiple splint, occult spavin, and in fact in a large percentage of our everyday cases a recourse to the chemistry of the food and ground would probably put us on the track of the cause of the disease. As in cancer, so in some of our tumour growths, the eye has been so pre-occupied in looking for the supposititious microbe that other causal agents are forgotten in our eagerness to find a mouldy growth. An axiom in bacteriology is that when a causal germ is found a remedial measure is close at hand; there is no adequate reason why this should not be so in bio-chemistry.

THE DOCTOR SAHIB.

PROPOSED TESTIMONIAL TO PROFESSOR HENRY POWER.

Sir,

In recognition of Dr. Power's long connection with the Royal Veterinary College as Professor of Physiology—which connection was only severed by his retiring from public life at the end of the last Summer Session—it was thought by many, who appreciated his kindness and great ability, that the occasion should not be allowed to pass without some mark of appreciation.

With this object in view a fund has been opened by the students at the College, and the Committee, feeling that there are many past students who would gladly assist in making the proposed testimonial a fitting one, wish to say that any contributions, however small, will be gladly received and acknowledged in *The Record* by the Hon. Sec.

The following subscriptions have been received :

P. G. Bond, Esq., Plymouth	£0	10	6
Capt. E. E. Martin, A.V.D.	0	10	6
V. de V. H. Woodley, Esq.	0	5	0
Louis M. Magee, Esq., Dublin	0	5	0

W. A. BROAD, Hon. Sec.

Royal Veterinary College,
Camden Town, N.W.,

COMMUNICATIONS, BOOKS AND PAPERS RECEIVED.—Messrs. J. Clarkson, W. A. Broad, J. J. O'Connor. The Doctor Sahib.

The Yorkshire Post, West Cumberland Times, Eastern Evening News.